

## REMARKS

The Examiner has rejected Claims 22-30, 40, 44, 48, and 49. In order to expedite the prosecution of the present application, and place the application in conditions for an interference being declared with U.S. Patent 5,939,301, Applicants have amended Claims 48 and 49 by making these claims independent claims, and have added new Claims 50 and 51. The Examiner's rejections are addressed below.

### **I. The 112 Rejection Should Be Withdrawn**

The Examiner has rejected the claims as allegedly lacking written description, asserting that the specification provides insufficient support for the scope of the claims. Applicants respectfully disagree. The Examiner's rejection is addressed in two parts below.

First, as noted above, Applicants have amended Claims 48 and 49 by making these claims independent, and have added new independent Claims 50 and 51. The Examiner does not appear to have raised any specific written description rejections against claims 48 and 49, therefore, these two claims, in independent form, should have the 112 rejection and associated objections withdrawn. New independent claims 50 and 51 should likewise be free of any 112 associated rejections or objections.

Independent Claim 48 recites that the mutation is a deletion of the N-terminal 283 amino acids of Tne polymerase. This mutant is described in the specification, for example, in Examples 3, 7, and 9 as having polymerase activity, but no detectable levels of 5'-3' exonuclease activity. Independent Claim 49 recites that the mutation in Tne is a Asp to Ala substitution at position 323. This mutant is described in the specification, for example, in Example 4, part E, and Examples 8 and 9 as having polymerase activity and no detectable level of 3'-5' exonuclease activity.

New Claim 50 recites that the mutation is a deletion of the 297 N-terminal amino acids of native *Thermotoga neapolitana* DNA polymerase. Support for this claim is found in the specification, for example, at part II. "Generation of Tne DNA Polymerases," which begins on page 37. The particular 297 deletion is described on page 38, lines 4-8. New Claim 51 recites that the mutation is a deletion of the N-terminal 5'-3' exonuclease domain of native *Thermotoga neapolitana* DNA polymerase. Support for

this claim is found in the specification, for example, via both the 283 and 297 deletion mutants, as well as at page 34, lines 4-12 (and Figure 1) describing the N-terminal location of the 5' exonuclease domain in polymerases, and page 34, line 21 - page 35, lines 2, describing polymerases lacking the N-terminal domain.

In regard to the remaining claims (Claims 22-30, 40, 44), Applicants submit the present specification provides more than adequate support.<sup>1</sup> As pointed out in the previous Response, under the Written Description guidelines, the present specification provides more than enough written description support.

In addition to remarks regarding written description support in the previous response (incorporated herein), Applicants would also like to direct the Examiner to part (I) of the Description of the Invention entitled "General Structural Features of DNA polymerases" on pages 33-37. This section describes the knowledge in the art regarding the various domains DNA polymerases are known to have, including the 5' and 3' exonuclease domains. This section, in combination with Figures 1 and 2, shows the various domains in selected polymerases (e.g. Eco Pol I, Taq, etc.) and how these domains line up with the Tne polymerase (e.g. Figure 1). This demonstrates an understanding in the art regarding the various domains of DNA polymerases. Numerous 5' exonuclease deletions of prior polymerases have been generated and characterized, providing guidance, in view of the present specification, for selecting a wide variety of mutants with recited properties. Therefore, given the specific mutations described in the current specification, and the general guidance in the specification (and the art) for deleting and mutating various domains, the written description rejection of Claims 22-30, 40 and 44 should be withdrawn. The Examiner has not provided any specific evidence to the contrary. It is not enough to make general allegations about uncertainty in the general field, when the specification and state of the art provide specific guidance that differentiates the present situation from general circumstances. To sustain the rejection, the Examiner must provide concrete evidence as to why a skilled artisan would be unable

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<sup>1</sup> It is noted that the present claims are copied from U.S. Pat. No. 5,939,301 ("the '301" patent). In issuing the '301 patent, the Patent Office has taken the position that the disclosure of the '301 patent was sufficient to support its issued claims, which are the same claims of the present invention. Yet the present specification provides substantially more support for the claims than does the '301 patent. Thus, the specification of the present invention must also provide sufficient support for the claims.

to, for example, generate a wide variety of 5'-exonuclease mutants based on the guidance provided.

## **II. 102 and 103 Rejections**

The Examiner has rejected claims 22 and 23 as allegedly being anticipated by Chatterjee et al. and has rejected Claims 22, 23, 25, 27-30, 44 and 48 as allegedly being obvious in view of Chatterjee et al. and Erlich et al. In light of the documentation that have been previously submitted by Applicants, it is believed that the 102 and 103 rejections have been addressed such that the Application can be placed in an interference with the '301 patent. In particular, Applicants have provided documentary evidence that removes the Chatterjee reference, the basis for all pending prior art rejections.

## **III. Interference Should be Declared**

Applicants submit that the present Application is in condition for an interference to be declared with U.S. Patent 5,939,301 with all the pending claims. At a minimum, Applicants submit that Claims 48-51 require that an Interference be declared with the '301 patent as these claims are clearly allowable and the '301 patent contains claims substantially similar to these claims.

In regard to Claim 48, 50 and 51, these three claims are substantially similar in scope to at least Claim 5 in the '301 patent. In regard to Claim 49, this claim is substantially similar in scope to at least Claim 3 of the '301. Given this overlap in claim scope, and the fact that these four claims are otherwise allowable, Applicants submit that an Interference should be declared to give Applicants an opportunity to establish priority to these claims.

## **CONCLUSION**

All grounds of rejection of the Office Action have been addressed and reconsideration of the application is respectfully requested. It is respectfully submitted that Applicants' claims should be passed into allowance. Should the Examiner believe that a telephone interview

would aid in the prosecution of this application Applicant encourages the Examiner to call the undersigned collect at (608) 218-6900.

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